Attachment A

Massachusetts Department of Public Health, Immunization Program
(617-983-6800 or 888-568-2850)

Guidelines for Evaluating Chickenpox-like Rash in Recipients of Varicella Vaccine in Day Care and School Settings

These guidelines assist with the evaluation of chickenpox-like rash in vaccine recipients, deciding whether or not they are infectious, and if they need to be excluded from day care or school settings. The two most important features to consider in making these determinations are: 1) the severity of the chickenpox-like illness and, if pertinent, any known exposure to chickenpox, and 2) the time interval since receipt of varicella vaccine, as outlined below.

Symptoms	• **Generalized rash (typically 200->500 lesions with many vesicles)** • **Fever** • **Cough** **(if "partial" immunity has developed, symptoms may be attenuated)**	• **Generalized rash, more maculo-papular than vesicular (usually <50 lesions)** • **Often afebrile** • **Minimally symptomatic** • **Known or possible exposure to chickenpox**	• **Generalized rash, more maculopapular than vesicular (usually <20 lesions [median=5])** • **Some localized vesicles at the site of injection (median=2)** • **Afebrile** • **Asymptomatic** • **No known exposure to chickenpox**
	and	***and***	***and***
Timing Post Vaccination	**if rash occurs at anytime**	**if rash occurs at >1 week**	**if rash occurs at 1-3 weeks (typically) but can occur up to 6 weeks**
	⇓	⇓	⇓
Type of Disease	**Wild-type chickenpox** (either vaccine has not yet induced protective immunity or vaccine failure)	**Vaccine-modified varicella syndrome (VMVS or "break-through chickenpox")** (occurs in 20% and 27% of vaccinated children and adults, respectively, with household exposure to wild-type varicella)	**Likely to be side effect of vaccine** (occurs in 1-5% of vaccinees)
	⇓	⇓	⇓
Infectious?	**Highly infectious**	**Infectious**	• ***Much less* infectious than wild-type disease** • **If transmission occurs, infection may be asymptomatic or attenuated**
	⇓	⇓	⇓
Exclude?	**Exclude from school until all lesions have dried and crusted over, or until no new lesions appear, usually by the 5th day after rash onset**	**Exclude as for wild-type chickenpox. However, lesions may crust over more quickly than in wild-type chickenpox, thereby permitting an earlier return to day care/ school.**	***If local policy permits*, the child may attend school**

[Please see the accompanying page for more details.]

Varicella (chickenpox) vaccine (*Varivax*, manufactured by Merck and Co.) has been available for use in the United States since March 1995. In Massachusetts, effective August 1, 1998, one dose of varicella vaccine was required for day care attendance at centers licensed by the Office for Child Care Services for all children born on or after January 1, 1997, **and** who are ≥ 19 months of age, **and** who are without a physician-certified, reliable history of chickenpox disease. Beginning September 1, 1999, 1 dose will be required for all susceptible students at entry to preschool, kindergarten and 7th grade. If the child is ≥ 13 years of age, 2 doses are required. A reliable history of chickenpox is defined as: 1) physician interpretation of parent/guardian description of chickenpox; 2) physician diagnosis of chickenpox; or 3) serologic proof of immunity.

Distinguishing rash induced by varicella vaccine virus from rash caused by wild-type virus in a vaccine recipient is critical in making appropriate community infection control decisions and patient management decisions, particularly regarding individuals at risk for serious complications of varicella. The two most important features to consider when evaluating a chickenpox-like rash in a vaccine recipient are 1) the severity of the chickenpox-like illness and, if pertinent, any known exposure to chickenpox; and 2) the time interval since receipt of varicella vaccine. The MDPH is providing the guidance outlined below to assist in making this determination.

There are three possible categories of chickenpox-like rash in vaccine recipients:

1. **Wild-type chickenpox (can occur at anytime post-vaccination)**:
   a) **<1 week post-vaccination** – In this case, exposure to wild-type virus happens prior to or immediately following vaccination. Wild-type chickenpox can occur in this scenario because there has been insufficient time for immunity to develop prior to exposure.
   b) **≥1 week post-vaccination** – In this case, the vaccine recipient has not responded sufficiently to the vaccine prior to exposure. The lack of vaccine-induced protection may also reflect insufficient time post-vaccination for immunity to develop; or it may be due to host- or vaccine-specific issues impairing response to vaccine ("vaccine failure").

   In **both** instances, the illness usually presents as typical chickenpox with a generalized rash with 200->500 lesions with many vesicles, fever, and cough. The patient should be **considered infectious and excluded** until the lesions dry and crust over, usually 5 days after rash onset.

2. **Vaccine-modified varicella syndrome (VMVS or "breakthrough chickenpox")** – This is a form of wild-type chickenpox that is less severe due to the development of "partial immunity" that was not sufficient to prevent disease but was able to attenuate symptoms. **It usually occurs >1 week post-vaccination**. VMVS can occur in up to 20% and 27% of vaccinated children and adults, respectively. VMVS usually presents as a generalized rash consisting of <50 lesions, usually more maculopapular, with a few vesicles. Patients are often afebrile and minimally symptomatic. Individuals with VMVS should still be **considered infectious and excluded** until the lesions dry and crust over. In this scenario, crusting over may occur more quickly than the usual 5 days after rash onset (e.g. 2-3 days after onset), facilitating an earlier return to day care/school.

3. **Vaccine-associated rash** ("side effect" from vaccine) – This is reported in 1% to 5% of vaccine recipients and **typically occurs 1-3 weeks, but is possible up to 6 weeks, post-vaccination**. It usually presents as a generalized rash, more maculopapular than vesicular, usually consisting of <20 lesions and a few vesicles at the site of injection (median = 2). Patients are afebrile and otherwise asymptomatic. If the clinical presentation fits these criteria and there is **no known exposure** to chickenpox, this rash may be related to varicella vaccination. Although there are no official guidelines, this type of rash is caused by attenuated vaccine virus, and, for this reason, many experts believe that it is **much less** infectious than disease caused by wild-type virus. If transmission of vaccine virus does occur, infection has been found to be mild or asymptomatic. Such patients may be considered **NOT infectious** and, if local day care/ school policy permits, **do NOT need to be excluded**. Day care and school programs will need to develop their own policies on this issue.
   Please note: Chickenpox-like rashes occurring during this time period may be caused by wild-type virus, particularly if there is a known or possible exposure to chickenpox or if the rash occurs during chickenpox season. (See VMVS above.)

The accompanying diagram assists in determining the nature of a post-varicella-vaccination rash and in making decisions regarding exclusion of patients from the day care/school setting. Starting at the top of the diagram: 1) find the category of symptoms that best matches the patient's and, if pertinent, any known or possible exposure history; 2) determine the timing of rash onset relative to vaccination; 3) follow the column down to determine the type of disease; 4) follow down the column further still to determine if the patient is infectious; and, finally, 5) follow down the column to determine if the patient needs to be excluded.